UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,912	03/14/2002	John H. Oates	0102323-00100	3592

. 21125	7590	11/28/2006

NUTTER MCCLENNEN & FISH LLP
WORLD TRADE CENTER WEST
155 SEAPORT BOULEVARD
BOSTON, MA 02210-2604

EXAMINER
VLAHOS, SOPHIA

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 11/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

		Application No.	Applicant(s)
Office Action Summary		10/099,912	OATES JOHN H.
		Examiner	Art Unit
		SOPHIA VLAHOS	2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*14 March 2002*</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>*14 March 2002*</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>*6/13/02, 9/26/02, 1/3/06*</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Objections

1.   Claims 1-29 are objected to because of the following informality:

A semicolon should be added after the word comprising (the end the preamble)

of each one of the aforementioned claims.

Claim 1, recites: (line 4 following the pre-amble) "... and storing **that** R-matrix..."

(emphasis added) it is suggested that the "that" be replace by "the".

Claim 11, recites (last limitation) : "...that R-matrix..." it is suggested that the

"that" be replace by "the".

Claim 9 (and 19), recite: (last paragraph) "...the host recalculates...", where the

"host" should be the "host controller".

Claim 5, mentions (line 1 following the preamble): "...multi-port switch..." and

(line 3) "...data switch..." where it is assumed that the two mentioned switches are the

same elements, therefore they should be consistent terminology.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

Claims 1-29 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. With respect to the independent claims 1, 11,

21, the claimed invention is not limited to a practical application. Viewed as a whole,

the claimed invention (see claims 1, 11, 21) generates matrices (and claims 11, 21

perfom data transfer to memories where the matrices are stored) is not practically

applied.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1-2, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Moher (U.S. 6,161,209).

With respect to claim 1, Moher discloses: a set of one or more first processing

elements, the set of first processing elements generating a matrix (hereinafter "R-

matrix") representative of cross correlations among user waveforms (column 43, lines

46-67, column 44, lines 1-29, matrix H is the matrix representative of cross-correlations

among user waveforms (line 55 of column 43), also see column 55, lines 61-67, column

56 lines 1-14, and system of Fig. 57)

Moher does not expressly teach: a first memory, the set of one or more first

processing elements, coupled to the first memory, and storing that R-matrix to

contiguous locations within the first memory.

However, at the time of the invention, it would have been obvious to a person

skilled in the art to use a memory (for example a computer) to store the R-matrix (the

matrix shown in column 44, equation (129)) so that the R-matrix is easily accessible for further processing or just stored for future reference.

With respect to claim 2, all of the limitations of claim 2, are analyzed above in claim 1, and Moher discloses: a second processing element coupled with the first memory (Fig. 57, part of the Decision Algorithm element), the second processing element accessing the R-matrix from contiguous locations within the first memory and generating symbol estimates as a composition of the R-matrix (see column 3, lines 5-8, column 4, lines 1-50, column 56, lines 21-65, equations 83-86, see estimation of transmitted symbol is a function (composition) of the cross-correlation matrix) and Fig. 57 where $\hat{b}$ (symbol estimates) see column 31, lines 56-59) are generated by the decision algorithm).

With respect to claim 21, claim 21 is analyzed similarly to claim 2 above.

5.   Claims 3, 4, 7, 22-23, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moher (U.S. 6,161,209) in view of Schmidl (U.S. 6,816,541).

With respect to claim 3, all of the limitations of claim 3 are analyzed above in claim 1 but Moher does not expressly teach: a second memory coupled with the set of first processing elements and a third processing element, the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation

between a code associated with one user and those associated with one or more other users, the third processing element places the gamma-matrix in the second memory.

In the same field of endeavor, Schmidl discloses: a third processing element, the third processing element generating a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users (column 3, lines 20-22, the "third" processing element is not shown but computation of matrix $R_{m,n}$ (can call this matrix a gamma matrix too) taking place in a processing element, see also column 3, lines 37-41 where I_m is the real part of the multi-user interference and column 3, lines 65-67 where I_m is subtracted to compute the data estimation and first equation of column 4, computing the I_m using R_{mn} – the gamma matrix).

At the time of the invention, it would have been obvious to a person skilled in the art to use the processing element of Schmidl that generates a matrix (hereinafter "gamma-matrix") representative of a correlation between a code associated with one user and those associated with one or more other users, so that the gamma matrix can be used to estimate multi-user interference (Schmidl , column 2, lines 8-19 see interference cancellation).

With respect to the limitations a second memory coupled with the set of first processing elements and the third processing element, the third processing element places the gamma-matrix in the second memory; at the time of the invention, it would have been obvious to a person skilled in the art to use a second memory (in a software routine for example) to store (place) the generated gamma matrix so that the matrix is

readily available for future reference and/or subsequent computations and it would have

been obvious to a person skilled in the art to couple the second memory with the set of

first processing elements a (that generated the R-matrix and perform data estimation)

and third processing element (that generates the gamma matrix) so that the generated

matrices can be readily retrievable for future reference or processing by the system of

Moher.

With respect to claim 4, all of the limitations of claim 4, are analyzed above in

claim 3, and the combination of Moher and Schmidl discloses: the third processing

element generating the gamma-matrix and placing that matrix in contiguous location

within the second memory (see claim 3 above), the set of first processing elements

accessing the gamma-matrix from contiguous locations within the second memory (the

combination of the Moher and Schmidl where the interference (computed using the

gamma matrix) is taken into account (subtracted from the data estimates)) and

generating the R-matrix (see column 55, lines 61-67, column 56 lines 1-14 of Moher).

With respect to claim 7, all of the limitations of claim 7 are analyzed above in

claim 3, and the combination of Moher and Schmidl discloses: wherein the third

processing element updates the gamma-matrix as users are added or removed from the

spread spectrum system (see Schmidl, column 4, lines 25-30 (where the R-matrix

corresponding to the gamma matrix of claim 3) is shown and any zero rows or columns

would indicate the absence of users from the system and non-zero columns indicate

their presence).

With respect to claim 22, all of the limitations of claim 22 are analyzed above in

claim 21 and claim 22 is analyzed similarly to claim 3 above.

With respect to claim 23, all of the limitations of claim 23, are analyzed above in

claim 22, and claim 23 is analyzed similarly to claim 4 above.

With respect to claim 26, all of the limitations of claim 26, are analyzed above in

claim 22, and claim 26 is analyzed above in claim 7.

6.   Claims 5, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Moher (U.S. 6,161,209) in view of Schmidl (U.S. 6,816,541) as applied to claims 3 and

21 respectively and in view of Milan et. al., (U.S. 7,028,114).

With respect to claim 5, all of the limitations of claim 5 are analyzed above in

claim 3, but the combination of Moher and Schmidl does not expressly teach: a multi-

port switch coupled to the third processing element and to the second memory, the third

processing element places the gamma-matrix in the second memory via the data

switch.

Solving the same problem: data transfer (between processing elements and a

memory) Milan et. al., discloses: a multi-port switch coupled to a processing element

and a memory (see column 1, lines 35-39, and 57-61, where the multi-port switch is the

usb hub, the memory is a computer/computer program and the processing element is

any peripheral device connected to the computer). At the time of the invention, it would

have been obvious to a person skilled in the art to use the wireless usb hub of Milan et.

al., in the system of taught by the combination of Moher and Schmidl (coupled to the

third processing element and the second memory) to transfer the generated matrix from

the processing element to the memory (computer program in a computer) without any

cable connection (less clutter).

With respect to claim 24, all of the limitations of claim 24 are analyzed above in

claim 21, and claim 24 is analyzed similarly to claim 5 above.

7.   Claims 11-12, 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Moher (U.S. 6,161,209) in in view of Harvey et. al., "DMA Fundamentals on

Various PC platforms" National Instruments , April 1991, (pages 1-2).

With respect to claim 11, claim 11 is analyzed similarly to claim 1 above, but

Moher does not expressly teach: the set of one or more first processing elements,

coupled to a direct memory access engine (hereinafter "DMA engine"), the DMA engine

coupled with the first memory, the DMA engine storing that the R-matrix to contiguous

locations within the first memory.

Solving the same problem (data transfer between processing elements and

memory), Harvey e. al., disclose: a direct memory access engine (DMA) (see DMA

controller in a computer, last paragraph of page 1, continued to page 2). At the time of

the invention, it would have been obvious to a person skilled in the art to use the DMA

controller (engine) (that is a built-in feature of a pc) to perform data transfer from an I/O

device (such as the set of one or more first processing elements) to the computer

(memory) since it allows for high speed data transfers, and the data transfers occur in

parallel, it increases overall system (pc) utilization (Harvey et. al., see second paragraph

of "overview" section page 1)

With respect to claim 12, all of the limitations of claim 12 are analyzed above in

claim 11, and claim 12 is analyzed similarly to claim 2 above.

With respect to claims 28, all of the limitations of claim 28 are analyzed above in

claim 21, and claim 28 is analyzed similarly to claim 11 above (where the DMA can be

coupled to the second processing elements (part of the system shown in Fig. 57 of

Moher as the I/O device) and the first memory (computer)).

With respect to claims 29, all of the limitations of claim 29 are analyzed above in

claim 21, and claim 29 is analyzed similarly to claim 11 above. (where the DMA can be

coupled to the third processing elements (part of the system shown in Fig. 57 of Moher

that was modified based on the teachings of Schmidl as the I/O device) and the second

memory (computer)).

8.   Claims 13, 14, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Moher (U.S. 6,161,209) in view of Harvey et. al., "DMA Fundamentals on Various

PC platforms" National Instruments , April 1991, (pages 1-2) as applied to claim 11, and

in view of Schmidl (U.S. 6,816,541).

With respect to claim 13, the base limitations of claim 13 are analyzed above in

claim 11, and claim 13 is analyzed similarly to claim 3 above.

With respect to claim 14 the base limitations of claim 14 are analyzed above in

claim 11, and claim 14 is analyzed similarly to claim 4 above.

With respect to claim 17, the base limitations of claim 17 are analyzed above in

claim 13, and claim 17 is analyzed similarly to claim 7 above.

Allowable Subject Matter

9.   Claims 6, 8-11, 16, 18-20, 25-27 are objected to as being dependent upon a

rejected base claim, but would be allowable if rewritten in independent form including all

of the limitations of the base claim and any intervening claims and the 35 U.S.C. §101

are overcome.

Contact Information

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to SOPHIA VLAHOS whose telephone number is 571 272

5507. The examiner can normally be reached on MTWRF 8:30-17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mohammed Ghayour can be reached on 571 272 3021. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SV
11/16/2006

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER